

XL Fortran Advanced Edition for Mac OS X



# Installation Guide

*Version 8.1*



XL Fortran Advanced Edition for Mac OS X



# Installation Guide

*Version 8.1*

**Note!**

Before using this information and the product it supports, read the information in “Notices” on page 11.

**First Edition (December 2003)**

This edition applies to version 8.1 of XL Fortran Advanced Edition for Mac OS X and to all subsequent releases and modifications until otherwise indicated in new editions.

IBM welcomes your comments. You can send them to [compinfo@ca.ibm.com](mailto:compinfo@ca.ibm.com). Be sure to include your e-mail address if you want a reply. Include the title and order number of this book, and the page number or topic related to your comment.

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© Copyright International Business Machines Corporation 2003. All rights reserved.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

---

# Contents

## Installation Guide . . . . . 1

Installing XL Fortran Version 8.1. . . . .	1
Prerequisites . . . . .	1
Installing XL Fortran using the GUI . . . . .	2
Installing XL Fortran using the command line . . . . .	3
Enabling the XL Fortran man pages. . . . .	3
Viewing the documentation . . . . .	4
Setting the correct NLSPATH . . . . .	5
Setting up the environment for the invocation commands . . . . .	5

Testing the installation . . . . .	5
Configuring the compiler . . . . .	6
The xlf_configure utility . . . . .	6
The new_install utility . . . . .	7
Uninstalling XL Fortran. . . . .	8

## Notices . . . . . 11

Trademarks and Service Marks . . . . .	12
--	----



---

## Installation Guide

This document contains essential information about IBM® XL Fortran Advanced Edition for Mac OS X. Please read it carefully before installing XL Fortran Advanced Edition for Mac OS X. Please also read the **README** file on the CD-ROM, which contains the most current information about XL Fortran Advanced Edition for Mac OS X.

---

### Installing XL Fortran Version 8.1

The high-level steps are:

1. Become the root user, or a user with administrator privileges.
2. Install the packages.
3. Enable the compiler man pages.
4. Set the correct NLSPATH.
5. Set up the environment for the configuration commands.
6. Test the installation.

### Prerequisites

#### Operating system

Mac OS X version 10.2 or 10.3

#### Hardware

Power Mac G4 or G5. The compiler, run-time library, and its generated object programs will run on Apple Power Mac G5 or G4 systems with the required software and disk space.

To take maximum advantage of different hardware configurations, the compiler provides a number of options for performance tuning based on the configuration of the machine used for executing an application. However, the compiler Scheduler models only the G5 architecture and does not exploit the G4 architecture optimally.

#### Disk space

- At least 80 MB for product packages
- At least 512 MB for paging and temporary files. High levels of optimization may require more space for paging and temporary files.

#### Required software

- The Mac OS X Developer Tools package, which includes gcc Version 3.3. The package is available from the Apple Developer Connection Member Site at <http://connect.apple.com/>. For Mac OS X 10.2, the upgrade to gcc Version 3.3 requires installation of the Apple package August2003gccUpdater.pkg. For Mac OS X 10.3 (Panther), Xcode Tools v1.0 or later is required.

**Note:** If you have installed a beta version of the XL Fortran compiler, you must uninstall it.

### Verifying space requirements

Use the following command to determine the amount of space available for the compiler installation in the default installation location:

```
df /opt
```

## Installing XL Fortran using the GUI

You can use the Installer application to install XL Fortran as follows:

1. Become the root user, or a user with administrator privileges.
2. Find the file `xlf.cmp.mpkg` in the packages directory of the installation CD or .dmg file.
3. Double-click `xlf.cmp.mpkg`.
4. If an Authenticate pop-up appears, supply the root user ID and password.
5. A message tells you that this Installer package needs to run a program to determine if it can be installed. Click **Continue**.
6. The Introduction page appears. Click **Continue**.
7. The Read Me page appears. Read the text, then click **Continue**.
8. The License page appears. Read the text, then click **Continue** followed by **Agree**.
9. The Select Destination page appears. Select a disk.

By default, XL Fortran will be installed in the following directory on the selected disk:

`/opt/ibmcmp/xlf/8.1`

To select a different destination (*relocation-path*), click **Choose**. XL Fortran will be installed in the following directory:

`relocation-path/opt/ibmcmp/xlf/8.1`

When you have selected your installation destination, click **Continue**.

10. The Installation Type page appears. To install all of the XL Fortran packages, click **Install**.

To install only some of the XL Fortran packages, click **Customize**, select the packages from the list that appears, and then click **Install**.

The following table shows the packages that are included in a complete installation, their prerequisites, and any restrictions on installing the packages in a non-default location.

XL Fortran packages and their prerequisites

Package name	Prerequisites	Description	Relocation
xlsmp.msg.rte	none	SMP run-time messages	must be installed in the same location
xlsmp.rte	xlsmp.msg.rte	SMP run-time dynamic libraries	
xlsmp.lib	xlsmp.msg.rte xlsmp.rte	SMP run-time static libraries	
xlf.lic	none	XL Fortran license	any location
xlf.msg.rte	none	XL Fortran run-time messages	must be installed in the same location
xlf.rte	xlf.msg.rte	XL Fortran run-time	
xlf.cmp	xlf.lic xlsmp.msg.rte xlsmp.rte xlsmp.lib xlf.msg.rte xlf.rte	XL Fortran compiler	any location
xlf.samples	none	Example programs	any location (optional)
xlf.help	none	Compiler documentation in HTML and PDF formats	any location (optional)

When the installation is complete, a message appears.

11. Select **File** from the Installer menu bar, then select **Show Log**.

After installing the selected package or packages, the installation program attempts to create the default configuration file. There are three possibilities:

- The configuration file was not created because you have not installed some of the required packages yet. When you install the missing packages, the installation program will attempt to create a configuration file again.
- The configuration file was created automatically.
- The configuration file could not be created automatically. Before you can use the compiler, you must create a configuration file manually as described in “Configuring the compiler” on page 5.

12. Click **Close** to close the Installer.

## Installing XL Fortran using the command line

You can install XL Fortran from the command line as follows:

1. Become the root user or a user with administrator privileges.
2. Open a terminal window.
3. Enter the following command:

```
/usr/sbin/installer -pkg absolute-path/xlf.cmp.mpkg -target / -dumplog
```

For example, to install XL Fortran from the CD:

```
/usr/sbin/installer -pkg /Volumes/CDROM/packages/xlf.cmp.mpkg -target / -dumplog
```

The installation program installs all of the XL Fortran packages and then attempts to create the default configuration file. If a message indicates that the configuration file could not be created, you must create a configuration file manually as described in “Configuring the compiler” on page 5.

## Enabling the XL Fortran man pages

Man pages have been provided for the compiler invocation commands and other commands that are provided with the compiler.

Before you can read the man pages, you must add the XL Fortran man directory to the MANPATH environment variable as follows:

1. Open a terminal window.
2. Enter the following command to determine which shell you are running:

```
echo $0
```

3. Enter the following command to determine whether the MANPATH environment variable has been defined:

```
echo $MANPATH
```

4. Update the MANPATH environment variable as follows:
  - If the **echo \$MANPATH** command does not return a path, set the MANPATH environment variable to the following value:

```
/opt/ibmcmp/xlf/8.1/man/en_US/man:/usr/share/man
```

or, if you installed the Compiler package in a non-default location:

```
xlf-path/opt/ibmcmp/xlf/8.1/man/en_US/man:/usr/share/man
```

- If the **echo \$MANPATH** command returns a path, set the MANPATH environment variable to the following value:

```
/opt/ibmcmp/xlf/8.1/man/en_US/man:$MANPATH
```

or, if you installed the Compiler package in a non-default location:

```
xl f-path/opt/ibmcmp/xlf/8.1/man/en_US/man:$MANPATH
```

- If your shell is tcsh, you can use the following command to set the value of MANPATH:

```
setenv MANPATH path
```

for example:

```
setenv MANPATH /opt/ibmcmp/xlf/8.1/man/en_US/man:/usr/share/man
```

or:

```
setenv MANPATH /opt/ibmcmp/xlf/8.1/man/en_US/man:$MANPATH
```

- If your shell is bash, you can use the following command:

```
export MANPATH=path
```

for example:

```
export MANPATH=/opt/ibmcmp/xlf/8.1/man/en_US/man:/usr/share/man
```

or:

```
export MANPATH=/opt/ibmcmp/xlf/8.1/man/en_US/man:$MANPATH
```

To invoke a man page, enter **man** followed by the command; for example, **man xlf**. You can also use various commands that work with man pages, such as **whatis** (**man -f**) and **apropos** (**man -k**).

To leave the man page, type: **q**.

## Viewing the documentation

The following documentation is provided as part of the XL Fortran Help package:

<b>Readme file</b>	A readme file is located in the root directory of the installation CD. This file is installed in the <b>/opt/ibmcmp/xlf/8.1/doc/en_US</b> directory.
<b>PDF books</b>	The PDF version of the XL Fortran documentation is stored in the <b>/doc/en_US/pdf</b> directory of the installation CD. When you install the Help package, the PDF files are copied to the <b>/opt/ibmcmp/xlf/8.1/doc/en_US/pdf</b> directory.
<b>HTML files</b>	<p>The HTML version of the XL Fortran documentation is installed in the <b>/opt/ibmcmp/xlf/8.1/doc/en_US/html</b> directory.</p> <p>To display the HTML version of the documentation, select <b>Help</b> from the Finder menu bar, then select <b>Mac Help</b>, then select <b>IBM XL Fortran Compiler</b>. You can also display the HTML files directly from the <b>/opt/ibmcmp/xlf/8.1/doc/en_US/html</b> directory.</p>
<b>Man pages</b>	Man pages are provided for the compiler invocation commands (such as xlf) and the following additional commands: xlf_configure, new_install, resetpdf, and cleanpdf. The man pages are installed in the <b>/opt/ibmcmp/xlf/8.1/man/en_US/man</b> directory.

## Setting the correct NLSPATH

If you used a non-default installation location, you must update the NLSPATH environment variable so that the compiler messages will be found. The following table shows which paths you must add for each package.

#### Updating the NLSPATH

Packages	Addition to NLSPATH
xlsmp.rte, xlsmp.rte, and xlsmp.lib	<i>smp</i> rt-path/opt/ibmcmp/msg/en_US/%N
xlf.lic	(no change)
xlf.mstg.rte and xlf.rte	<i>xlf</i> rt-path/opt/ibmcmp/msg/en_US/%N
xlf.cmp	<i>xlf</i> -path/opt/ibmcmp/xlf/8.1/msg/en_US/%N
xlf.samples	(no change)
xlf.help	(no change)

## Setting up the environment for the invocation commands

XL Fortran is not automatically installed in **/usr/bin**. To invoke the compiler without having to specify the full path, do one of the following steps:

- Create symbolic links for the specific driver contained in **/opt/ibmcmp/xlf/8.1/bin** (or *xlf-path/opt/ibmcmp/xlf/8.1/bin*) to **/usr/bin**, or
- Add **/opt/ibmcmp/xlf/8.1/bin** (or *xlf-path/opt/ibmcmp/xlf/8.1/bin*) to the PATH environment variable.

## Testing the installation

To test the product install and the critical search paths, try building the following simple application.

1. Create the following Fortran program and name the source file **hello.f**:

```
PRINT *, "Hello World!"
END
```

2. Use the **xlf90** command to compile the test program. For example:

```
/opt/ibmcmp/xlf/8.1/bin/xlf90 hello.f -o hello
```

3. Run the program:

```
./hello
```

The expected result is that "Hello World!" is displayed on the screen.

4. Check the exit code of the program:

```
echo $?
```

The result should be zero.

---

## Configuring the compiler

Before you can use the compiler, you must create a configuration file. If the configuration file is named **/etc/opt/ibmcmp/xlf/8.1/xlf.cfg**, it will be used by default whenever you invoke the compiler.

When you install XL Fortran, the installation program attempts to create a default configuration file. If the installation program is successful, you can skip this section.

You may need to create a configuration file manually in the following situations:

- You receive a message that the configuration file could not be created automatically.

- You successfully create the default configuration file but later want to change it, for example if you install a new version of the gcc.
- You want to create additional configuration files.

XL Fortran contains two programs that you can use to create configuration files manually:

- The `xlf_configure` utility creates a configuration file (default or non-default) based on the information that you provide.
- The `new_install` utility provides a simplified method of invoking the `xlf_configure` utility to create the default configuration file. When the installation program attempts to create a configuration file automatically, it uses the `new_install` utility.

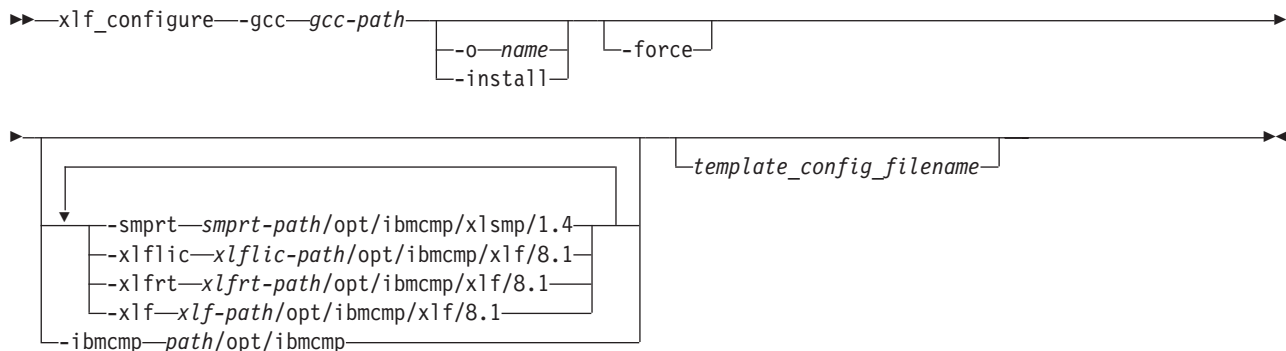
The following table describes some of the attributes in the configuration file.

Configuration attributes

Attribute	Contents	Additional information
<code>gcc_path</code>	The location of the gcc	The gcc command must be located in the <b>bin</b> directory under the specified path.
<code>gcc_libs</code>	A comma-separated list of gcc libraries	The gcc returns this list to the <b>xlf_configure</b> utility.
<code>gcc_libdirs</code>	A comma-separated list of directories that contain gcc libraries	The gcc returns this list to the <b>xlf_configure</b> utility.

## The xlf\_configure utility

The **xlf\_configure** command has the following syntax:



where:

**-o name**

Specifies the name of the configuration file to generate. By default, output is written to stdout (the screen).

**-install**

Generates a file with the required name and the required location for the default configuration file: `/etc/opt/ibmcmp/xlf/8.1/xlf.cfg`

**-force**

Forces the **xlf\_configure** utility to overwrite any existing output file with the specified name and path. By default, **xlf\_configure** issues an error message and stops if the specified file already exists.

**-gcc** *gcc-path*

Specifies the path where the gcc's bin directory is installed. In the configuration file, the `gcc_path` attribute is set equal to this path.

For example, if the gcc command is `/usr/bin/gcc`, you would specify

**-gcc** `/usr`

**-smprt** *smprt-path/opt/ibmcmp/xlsmp/1.4*

Specifies the path for the `xlsmp.msg.rte`, `xlsmp.rte`, and `xlsmp.lib` packages. By default, this is `/opt/ibmcmp/xlsmp/1.4`.

**-xlflic** *xlflic-path/opt/ibmcmp/xlf/8.1*

Specifies the path for the `xlf.lic` package. By default, this is `/opt/ibmcmp/xlf/8.1`.

**-xlfrt** *xlfrt-path/opt/ibmcmp/xlf/8.1*

Specifies the path for the `xlf.msg.rte` and `xlf.rte` packages. By default, this is `/opt/ibmcmp/xlf/8.1`.

**-xlf** *xlf-path/opt/ibmcmp/xlf/8.1*

Specifies the path for the `xlf.cmp` package. By default, this is `/opt/ibmcmp/xlf/8.1`.

**-ibmcmp** *path/opt/ibmcmp*

Specifies the path where all of the XL Fortran packages (`xlsmp.msg.rte`, `xlsmp.rte`, `xlsmp.lib`, `xlf.msg.rte`, `xlf.rte`, and `xlf.cmp`) are installed.

*template\_config\_filename*

The input file that is used to construct the configuration file. By default, this is `/opt/ibmcmp/xlf/8.1/etc/xlf.base.cfg`. If you relocated the `xlf.cmp` package but want to use the default template, specify:

*xlf-path/opt/ibmcmp/xlf/8.1/etc/xlf.base.cfg*.

## The new\_install utility

To run `new_install`, do the following:

1. Change to the directory that contains the `new_install` and `xlf_configure` executables:

**cd** `/opt/ibmcmp/xlf/8.1/bin`

or, if you installed the Compiler package in a non-default location:

**cd** *xlf-path/opt/ibmcmp/xlf/8.1/bin*

2. Run the following command:

**./new\_install**

The `new_install` command attempts to determine the path to gcc at the 3.3 or later level. It also determines the paths of the XL Fortran packages, and issues the following command:

```
xlf_configure -gcc gcc-path -install
-smprt smprt-path/opt/ibmcmp/xlsmp/1.4
-xlflic xlflic-path/opt/ibmcmp/xlf/8.1
-xlfrt xlfrt-path/opt/ibmcmp/xlf/8.1
-xlf xlf-path/opt/ibmcmp/xlf/8.1
xlf-path/opt/ibmcmp/xlf/8.1/etc/xlf.base.cfg
```

where:

- *gcc-path* is the path where the gcc's bin directory is located.

- *smpmt-path* is the path where the **xlsmpt.msg.rte**, **xlsmpt.rte**, and **xlsmpt.lib** packages are installed.
- *xlflc-path* is the path where the **xlflc.lic** package is installed.
- *xlfrt-path* is the path where the **xlflc.msg.rte** and **xlflc.rte** packages are installed.
- *xlfl-path* is the path where the **xlflcmp** package is installed.

If **new\_install** is unable to obtain the necessary information, you will need to run the **xlfl\_configure** utility manually.

---

## Uninstalling XL Fortran

To uninstall all of the XL Fortran packages that you installed, do the following:

1. Open a terminal window.
2. Remove the XL Fortran compiler plug-in from the Xcode IDE by running the following script:

```
/opt/ibmcmp/xlf/8.1/exe/xlf_ide_plugin_uninstall
```

(If you used a non-default location, insert *xlfl-path* before `/opt`.)

3. Delete the directory that contains the XL Fortran files. If you installed all of the packages in the default location, enter:

```
/bin/rm -rf /opt/ibmcmp/xlf
```

If you used a non-default location or several non-default locations, enter:

```
/bin/rm -rf relocation-path/opt/ibmcmp/xlf
```

for each of the locations.

4. Delete the receipts for the XL Fortran packages:
5. Delete the default configuration file, and a configuration file used by Xcode:

```
/bin/rm /etc/opt/ibmcmp/xlf/8.1/xlf.cfg
```

```
/bin/rm /etc/opt/ibmcmp/xlf/8.1/gxlf.cfg
```

6. Delete the symbolic link that causes the XL Fortran help to appear in the Mac Help menu:

```
/bin/rm /Library/Documentation/Help/ibmxlf
```

7. Delete the run-time message file:

```
/bin/rm /opt/ibmcmp/msg/en_US/xrfmsg90.cat
```

(If you used a non-default location, insert *xlfrt-path* before `/opt`.)

8. Delete the run-time files:

```
/bin/rm /opt/ibmcmp/lib/libxlf*.dylib
```

(If you used a non-default location, insert *xlfrt-path* before `/opt`.)

9. If you no longer need the SMP libraries, which are used by both XL Fortran and XL C/C++, delete them as follows. Do not delete these libraries if you have XL C/C++ installed on your system or if you have any Fortran, C, or C++ applications that link to these libraries.

```
/bin/rm -rf /Library/Receipts/xlsmpt*.pkg
```

```
/bin/rm -rf /opt/ibmcmp/lib/libxlsmpt*.dylib
```

```
/bin/rm -rf /opt/ibmcmp/lib/libxlomp_ser*.dylib
```

```
/bin/rm -rf /opt/ibmcmp/msg/en_US/smpmt.cat
```

```
/bin/rm -rf /opt/ibmcmp/xlsmpt
```

(If you used a non-default location, insert *smprt-path* before /opt.)



---

## Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing  
IBM Corporation  
North Castle Drive  
Armonk, NY 10504-1785  
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

IBM World Trade Asia Corporation  
Licensing  
2-31 Roppongi 3-chome, Minato-ku  
Tokyo 106, Japan

**The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:**

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

Lab Director  
IBM Canada Ltd. Laboratory  
B3/KB7/8200/MKM  
8200 Warden Avenue  
Markham, Ontario L6G 1C7  
Canada

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

#### COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrates programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. You may copy, modify, and distribute these sample programs in any form without payment to IBM for the purposes of developing, using, marketing, or distributing application programs conforming to IBM's application programming interfaces.

---

## Trademarks and Service Marks

The following terms are trademarks of the International Business Machines Corporation in the United States, or other countries, or both:

- IBM

Other company, product, and service names may be trademarks or service marks of others.





Program Number: 5724-G13

GC09-7875-00

